Current List of Changes to Part H

On December 15, 2013, the DAQ submitted to EPA Region 8, Part H.11, 12, and 13 of the $PM_{2.5}$ State Implementation Plan (SIP) for the Salt Lake City and the Provo non-attainment areas. Upon receipt of the SIP, EPA identified two concerns with Part H of the SIP.

The first concern identified by EPA was that conditions in Part H exempted the refineries from emission limits during startup/shutdown operations. The EPA commented that sources cannot be exempt from emission limits during startup/shutdown, and also asked DAQ to evaluate startup/shutdown requirements for all reasonable available control technology (RACT) sources included in the SIP. The DAQ has removed the language from Part H that provides exemptions. The DAQ has also completed an evaluation of startup/shutdown conditions for all sources that underwent a RACT analysis and has incorporated conditions in Part H, where applicable, for startup/shutdown operations.

The second concern identified by the EPA was in regards to the RACT control implementation time frame. In the SIP, many of the controls required for major point sources to meet RACT are not required until 2018 or 2019. As the SIP was being developed, studies conducted by the DAQ to determine controls required to achieve attainment in the Salt Lake and Provo areas, showed that no matter what controls were required for point sources, the attainment date would not be advanced. Since the attainment date could not be advanced, the DAQ did not require sources to conduct a detailed analysis and determine the earliest date required controls could be installed. The EPA reported to the DAQ that RACT controls must be installed at the earliest date possible. The DAQ requested sources to provide documentation to show the earliest date controls could be installed. The DAQ has received and reviewed this documentation provided by the sources and revised RACT implementation time frames, where applicable, have been incorporated into Part H.

The DAQ has made a few additional changes to Part H to correct typographical errors and to clarify language. Also, new conditions were added to Part H.11.g.vii to allow refineries to modify plant operations to produce gasoline that meets the corporate average sulfur specification for Tier 3 of the federal motor vehicle control program.

This document summarizes the changes the DAQ has incorporated into Part H as a result of comments from EPA and the subsequent analysis of data received from affected sources.

General Refinery Requirements

Startup / Shutdown

In response to UDAQ's request for additional information regarding startup and shutdown language previously approved by the Air Quality Board on January 8, 2014, The Utah Petroleum Association submitted feedback and suggested changes to the general conditions found in Part H.11.g. for refineries. The following changes have been reviewed and found acceptable and appropriate:

- H.11.g.i.A.III – FCCU SO2 emissions: This paragraph was removed. All refineries operating a FCCU will meet the limits found in H.11.g.i.A.I whenever the FCCU is in operation as per the compliance methodology found in H.11.g.i.A.II.

- H.11.g.i.B.III – FCCU PM emissions: This paragraph was removed. All refineries operating a FCCU will meet the limits found in H.11.g.i.B.I whenever the FCCU is in operation as per the compliance methodology found in H.11.g.i.B.II. Old paragraph H.11.g.i.B.IV will be renumbered.

- H.11.g.ii.A – Refinery Fuel Gas: The words "except during periods of startup, shutdown or malfunction" have been removed. The limit now applies at all times.

- H.11.g.v.B – Hydrocarbon Flares: This section now reads as follows:

By no later than January 1, 2019, all major source petroleum refineries in or affecting a designated $PM_{2.5}$ non-attainment area within the State shall install and operate a flare gas recovery system or equivalent flare gas minimization process(es) designed to limit hydrocarbon flaring from each affected flare to levels below the values listed in 40 CFR 60.103a(c), except during periods when one or more process units, connected to the affected flare, are undergoing startup, shutdown or experiencing malfunction. Flare gas recovery is not required for dedicated SRU flare and header systems, or HF flare and header systems.

These changes satisfy the comments received regarding startup and shutdown language for the refineries. No blanket startup or shutdown exemption to the limitations remains in effect. Such language does remain in effect for operation of the flares as safety/control devices when needed for control of upstream process units experiencing startup, shutdown or malfunction. As the operation of the flares under these circumstances is both appropriate and desired, retention of the language as shown above is also appropriate.

Implementation Schedule

Most of the implementation dates have been advanced. The refineries have already committed to implementing the changes found in this revised evaluation. Several of the less technically- and infrastructually-involved changes have already been completed or are in the final stages of being implemented at all major source refineries. Therefore, the limitations on refinery fuel gas (H.11.g.ii.A), heat exchangers (HH.11.g.iii.A), and leak detection and repair requirements (H.11.g.iv.A) have all had their implementation dates advanced. This date has advanced to January 1, 2015 (the anticipated implementation date of the moderate subpart IV SIP), for each of these requirements except the enhanced LDAR requirements found in Subpart GGGa. Each of the refineries is anticipating full implementation of Subpart GGGa during calendar year 2015, with full compliance taking approximately 9 to 12 months. An implementation date of January 1, 2016, was therefore selected, still two full years in advance of the original compliance date.

The FCCU requirements found in H.11.g.i, and the individual source-wide daily and annual SIP emission caps found in H.12.b, g, k, and r will remain with implementation dates of January 1, 2019. The changes at the FCCUs require large capital expenditures and long term construction projects on the part of the individual refineries: wet gas scrubber installation at both Holly and Tesoro, pall filter installation at Big West. These projects are not anticipated for completion until late in calendar year 2017 or early 2018. Following construction, a period of shakedown and testing will follow. Setting a static implementation date of January 1, 2019, for these requirements remains the most valid approach.

ATK Launch Systems Inc. – Promontory (ATK)

Startup / Shutdown

Boilers

The ATK will operate two 71 MMBTU/hr natural gas boilers to support manufacturing processes. One boiler in Building M-576 will be operated year round. The remaining boiler will provide steam for building heat, but will be shut-down during the warm weather months for maintenance. It typically takes two to three weeks for startup and about 24-hours/year for shutdown.

Operations Using VOC Compounds
These manufacturing operations include processes that utilize solvents for cleaning hardware. Solvents are applied manually by hand wiping with a rag, rinsing with a squeeze bottle or by dipping in an ambient temperature bath. Solvent containers are kept closed unless opened to add or remove material. Startup and shutdown emissions can't be distinguished separately from those emitted during normal operation.

Production Testing, Rocket Motor Testing, and OBOD
Testing is routinely performed on propellant samples for research and development or quality assurance reasons. Generally, testing is short duration; typically lasting a few seconds. The exception is when full scale flares are tested. Flare burns can last from two to seven minutes. Because of the short duration of most test events and the immediacy at which PEP reaches operating temperature, there is no way to differentiate emissions during startup and shutdown phases.

ATK periodically conducts test firings of fully assembled rocket motors. These tests typically last between one to two minutes. Due to the energetic nature of solid rocket propellant, nominal operating temperature and pressure is reached in the combustion chamber almost immediately following ignition. Therefore it is not possible to differentiate startup/shutdown emissions from normal operation.

Dust Collectors and Cyclones
The control units are required to undergo inspection prior to start-up to ensure the fidelity of pollution control equipment. Due to the nature of the processes involved, there is no increase in emissions as the control equipment starts up and shuts down. The control equipment provides the same efficient filtration for either event.

Implementation Schedule
Previously ATK was required to replace the boilers with boilers that have LNB and FGR by January 2017. ATK will now replace one boiler with ultra-low NO_x burners that will have an emission rate of 9 ppm. This boiler will be operational by January 2016. The other boiler will be limited to standby operation and shall not consume more than 100,000 MCF per rolling 12-month period unless upgraded so the NO_x emission rate is no greater than 30 ppm. This will reduce the NO_x emission rate for both boilers by 8.44 tons per year.

Big West Oil Refinery (BWO)

Startup / Shutdown
As with the other refineries, BWO elected to follow the general refinery requirements with respect to startup and shutdown considerations. However, as a part of the SIP RACT evaluation, BWO did elect to install and operate a redundant caustic scrubber system to work in conjunction with the SRU. This caustic scrubber will work as a backup unit for those periods when the SRU is out of service, effectively serving as startup and shutdown controls for the SRU. With the addition of this unit, BWO is able to most effectively meet the SRU SO_2 emission limit at all times – without additional startup or shutdown requirements.

Implementation Schedule
BWO is able to meet the accelerated implementation schedule imposed by the updates to Section IX.H.11.g – Refinery General Requirements. This includes fuel gas sulfur limits, heat exchanger monitoring, tank degassing, and the Subpart GGGa LDAR requirements. BWO is currently conducting engineering evaluations on flare gas recovery systems, and undergoing the initial construction efforts for installation of the pall Filter. As these final two components directly impact the establishment of the daily and annual emission caps found in Section IX.H.12.b for BWO, retention of the January 1, 2019, implementation dates for these items is appropriate.

Bountiful City Light and Power (BCLP)

Startup / Shutdown

In order to minimize emissions generated during startup and shutdown of the combustion turbines, BCLP has a defined emission minimization plan. The plan is similar in scope to those at all the smaller municipal power generation facilities, and consists of two main components: defining the periods which constitute startup and shutdown, and limiting the total duration of those periods on a daily basis.

As most startup and/or shutdown periods are of very short duration, standard stack testing cannot be used to obtain emission totals when operating in these modes. Similarly, requiring use of expensive, expanded operating range CEM equipment to obtain emission information is of limited use when the ultimate goal is emission reduction through limiting the total amount of time the turbines are operating in these modes.

Implementation Schedule

As an update to its original RACT submission in March of 2013, BCLP submitted new information dated April 25, 2014. In this most recent submission, BCLP demonstrated that IC #8 has been permanently retired from service at the plant, leaving only the combustion turbines as main power generators. This RACT review has been updated with respect to this information. The combustion turbines have been installed and operational since 2012, with no changes in operation or controls since installation.

CER Generation II, LLC (CER)

Startup / Shutdown

In order to minimize emissions generated during startup and shutdown of the combustion turbines, CER has a defined emission minimization plan. The plan consists of two main components: defining the periods which constitute startup and shutdown, and limiting the total duration of those periods on a daily basis.

The turbines at CER are controlled with SCR systems which require a minimum operating temperature before becoming effective. Limiting the total duration of startup insures that the turbine controls are in service promptly under the majority of operational conditions, by requiring that the turbines are brought up to temperature as expeditiously as possible.

Implementation Schedule

The turbines at CER are already installed and operational with all control systems in place. No implementation schedule is required.

Central Valley Water Reclamation Facility (CVWRF)

Startup / Shutdown

CVWRF operates the engines on a continuous basis with scheduled shutdowns for maintenance approximately every six weeks. Startup duration is less than two minutes and shutdowns are on an automatic four minute timer (manufacturer's recommendation).

Implementation Schedule

Current operations at the CVWRF have been determined to meet the requirements of RACT, there is no further implementation schedule proposed.

Chemical Lime Company (LHoist North America)

Startup / Shutdown

RACT established the installation of SNCR on the rotary kiln along with a baghouse. Kiln emissions will be exhausted through the baghouse during all startup, shutdown, and operation of the kiln. Consequently, no special startup and shutdown provisions are necessary for the baghouse technology.

SNCR technology is based upon the NO_x exhaust gas stream being injected with either ammonia or urea, to convert the NO_x gases into gaseous nitrogen and water vapor. The approximate temperature range where SNCR is effective is 1,600 - 2,100 degrees Fahrenheit. Operation at lower temperatures results in unreacted ammonia slip, and at higher temperatures, NO_x emissions can actually be increased. The limited temperature range in which SNCR is effective is reflected in Table 3 (Work Practice Standards) to 40 CFR 63 Subpart DDDDD (National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters) which prohibits use of SNCR during startup until the flue gas temperatures reach the appropriate range. Although this rule is for boilers and heaters, the basis for the requirement is due to the temperature range at which SNCR is effective. Shutdown provisions, means either a controlled reduction or a cessation of fuel combustion which reduces or ceases NO_x generation due to fuel combustion. Shutdown also reduces the temperature at which SNCR is effective.

Startup/shutdown provisions for SNCR technology will thus correspond to: (a) no ammonia or urea injection during startup until the combustion gases exiting the kiln reach the temperature when NO_x reduction is effective, and (b) no ammonia or urea injection during shutdown.

Implementation Schedule

The timeline for compliance with the SNCR and baghouse control technologies for the Grantsville plant must cover the same time period and be completed concurrently, as installation of these controls during different time periods is not practical. As stated above, the timeline for the design, installation and testing of the SNCR is a 3-year time period. This includes the timeline for installation of baghouse control technology. Resumption of operations of the Grantsville plant will be dependent upon market conditions and the installation of RACT controls.

Chevron Products Company (Chevron)

Startup / Shutdown

As with the other refineries, Chevron has elected to follow the general refinery requirements with respect to startup and shutdown considerations. Chevron maintains a number of startup / shutdown and outage plan documents for the various components and process units within the refinery. These documents need to be adjusted to account for changes in feedstock, catalyst formulations, outage schedules, the effects of consent decrees, and the changes resulting from implementing RACT. Without the ability to adjust these documents to changing conditions, especially those brought about by competing regulatory requirements, the refinery would be unnecessarily burdened by a lengthy rulemaking process. Therefore, Chevron will follow the startup and shutdown requirements found in IX.H.11.g.

Implementation Schedule

Chevron is able to meet the accelerated implementation schedule imposed by the updates to Section IX.H.11.g – General Refinery Requirements. This includes fuel gas sulfur limits, heat exchanger monitoring, tank degassing, and the Subpart GGGa LDAR requirements. Chevron is currently undergoing an engineering analysis for flare gas recovery on the remaining hydrocarbon flare at the refinery. Chevron identified two additional RACT projects with multi-year schedules which prevent the refinery from undertaking an overall earlier implementation date. The projects include installation of SCR controls on the gas fired compressors in the reformer unit, and replacement of the #1, 2, and 4 boilers.

The installation of SCR will be completed by the end of 2014, but shakedown and testing would prevent an implementation date earlier than mid-2015. The boiler replacement project will not be completed until late-2017. As the annual and daily emission caps found in Section IX.H.12.g are dependent on the completion of these projects, and to maintain consistency between the refineries, the retention of the later January 1, 2019, implementation date is appropriate.

Great Salt Lake Minerals Corporation (GSLM)

Startup / Shutdown

RACT was established as baghouse and/or wet scrubber for PM control, and ultra low NOx burner technology for NOx control. None of these control strategies result in startup shutdown emissions because they are in operation either prior to or at the same time processes are in operation. In addition, GSLM has in place procedures that also include adherence to manufacturer's recommendations for operation and complete periodic equipment inspections. PM control equipment has enforceable PM emission rate limitations in both the approval order and Title V permits to verify the PM control efficiencies.

Implementation Schedule

GSLM is already implementing the NO_x boiler requirements as they were previously established in both the approval order and Title V permits.

With the exception of wet scrubber AH-013, all other baghouses and wet scrubbers currently meet the SIP limitation requirements. Therefore, the implementation of stack test requirements for all other baghouses and wet scrubbers can be moved up to be completed by January 1, 2015. The replacement of AH-013 is under design currently but implementation to verify the emission rate can be moved up one year to January 1, 2016.

Finally, the requirement to install ULNB technology on the dryers is also under preliminary design but the implementation date shall remain as originally required for January 1, 2017, to ensure the proper design, permitting, and installation of all the burners on site.

Hexcel Corporation (Hexcel)

Startup / Shutdown

Hexcel's standard operating procedure is to not start processing product until desired operating conditions have been achieved. For the fiber line operations, the startup sequence begins prior to the input or while passing of polyacrylonitrile (PAN) through the first oxidation oven. For the pre-preg operations the desired operating condition is achieved prior to passing pre-preg through the system. Similarly, shutdown of the system is conducted at a time when no product is running through the fiber lines or pre-preg processes. The natural gas fired oxidation ovens (LNB), low and high temperature furnaces (RTO and fume incinerators), and burner boxes are brought to temperature specification prior to fiber passing through the process. Therefore, during startup and shutdown of the carbon lines, small amounts of process related emissions are expected but are accounted for as "normal process emissions" in Hexcel's facility-wide process or natural gas emission/consumption enforceable limits, not excess emissions.

Oxidation Ovens

During startup the LNB ovens are brought to temperature prior to initiating PAN to pass through the process. It is critical for optimal processing of PAN for all systems to be at normal operating conditions to result in a desired fiber product. To compress the startup time, Hexcel brings the oxidation ovens to temperature in sequence within two hours. During startup of a cold oven, NO_x emissions tend to be lower because of lower oven temperatures and excess ambient air.

Low Temperature Carbonization Furnaces
Emissions from the low temperature carbonization furnaces are controlled by a dedicated fume incinerator (fiber lines 2, 3, 4, 5, 6, 7, 8, 10, 11, and 12) or a RTO (fiber lines 13 and 14). Hexcel's internal procedures require the incinerators/oxidizer be brought on-line and at permitting temperature as well as the baghouse to be operating prior to initiating fiber line operations. There will not be any excess (startup) emissions because emissions from natural gas combustion during this time will be similar or less than normal operations.

High Temperature Carbonization Furnaces
For each fiber line, a burner box is dedicated to each high temperature carbonization furnace. Fiber lines 13 and 14 have an additional RTO and baghouse controls. Hexcel's internal procedures require igniting the burner boxes and starting the RTO and baghouse prior to fiber being passed through high temperature carbonization furnaces. There will not be any excess (startup) emissions because emissions from natural gas combustion during this time will be similar or less than normal operations.

For shutdown, Hexcel follows an internal procedure to discontinue passing fiber through the process prior to control devices being shutdown (or cooled off).

Implementation Schedule
Hexcel's SIP limits do not have an implementation date associated with them because the limits are based on throughput and consumption which include two additional fiber lines (15 and 16) not currently in operation at the facility. However, Hexcel proposes to submit an application for the modification to add fiber lines 15 and 16 in the Fall of 2014, with expected construction by mid-2015.

Hill Air Force Base: Main Base (HAFB)

Startup / Shutdown
Startup and shutdown for painting and depainting operations were reviewed and determined that there is no time limit required for painting and depainting operations as no excess emissions result during these time frames.

Implementation Schedule
HAFB already meets RACT for all of its operations so no adjustment in implementation date is required.

Holly Refining & Marketing Company (Holly)

Startup / Shutdown
Holly supplied startup and shutdown information for most process units at the refinery. In most cases, the information provided matched up with the general refinery requirements already found in section IX.H.11.g. In those areas where Holly differed from the general requirements, the procedures provided by the refinery were best contained within a set of work practices maintained by the source. Attempting to include the complete procedures for implementing an orderly refinery shutdown or restart within the limitations of section IX.H.12 is beyond the scope of this review.

Implementation Schedule
As with the other refineries, Holly is able to meet the earlier deadlines for tank degassing, fuel gas sulfur content, heat exchanger monitoring, Subpart GGGa LDAR requirements, and SRU SO_2 emission limitations. Holly is the only refinery able to meet both the FCCU particulate and SO_2 emission limitations upon SIP issuance, as it has already installed both WGS control systems. Flare gas recovery and therefore the plant-wide emission caps established in IX.H.12.k are dependent on construction of a

new flare gas recovery system. This system is scheduled for completion in mid-2018. Retention of the January 1, 2019, implementation date for these items is therefore appropriate.

Kennecott Utah Copper LLC (KUC) – Bingham Canyon Mine

Startup / Shutdown

The Bingham Canyon Mine is designed to be operated 24 hours per day, seven days per week. Operations at the mine are on-going and do not go through periods of startup and shutdown. KUC has implemented a solid maintenance, inspection, and idling program for the haul trucks to minimize emissions including during periods when the trucks would startup and shutdown, such as periods of maintenance, fueling, and shift change. KUC has implemented an idling management program to reduce emissions.

Haul trucks and support equipment used at the facility meet the required EPA standards for non-road equipment. Good operating practice, including the maintenance and inspection program control emissions during startup and shut down of the equipment. The facility uses on-road specification diesel fuel for its off-road equipment. Use of ultra-low sulfur diesel fuel in all of the facility's diesel powered equipment controls emissions during operation, including startup and shutdown.

Implementation Schedule

KUC periodically upgrades its haul truck fleet to take advantage of available higher tier level, lower-emitting engines. In recent years, KUC has replaced haul trucks with a higher capacity where possible, which has led to a decrease in the round trips and truck operating hours, thereby reducing emissions.

As trucks are replaced, KUC is required to purchase the highest tier level trucks available that meet the production requirement, from certified manufactures. This will result in a NO_x reduction of at least 92.0 tons per year for 2020, but because the attainment date is 2019, these emissions cannot be counted for attainment goals.

Kennecott Utah Copper LLC-Power Plant

Startup / Shutdown

Power Plant

Occasionally a unit will need to be taken offline to make repairs. These are generally planned outages that are scheduled during low load hours if possible. The unit will be ramped down slowly in a controlled fashion to minimize impacts to equipment.

Unscheduled outages can be triggered by events outside of operator control. These generally cause the burner management system to initiate an instantaneous safety shut down. These trips will cause the automatic power down of the electrostatic precipitators to prevent a possible secondary raw fuel ignition. Once the root cause of the trip has been determined and mitigated the unit is put back online based on manufacturer's recommended procedures based on the conditions existing at the time the unit is re-started.

Units 1-3 have not been historically operated during the winter months. These are designed to be baseload units. Because these units were not designed for frequent startup and shutdown the units are often left online during low load hours of short duration (overnight), thus reducing frequency of startups and shutdowns. Units 1-3 will be decommissioned by 2017.

Low NO_x burners generally achieve NO_x emissions reduction through staged combustion and controlling the amount of oxygen in the primary combustion zone. KUC will achieve startup and shutdown NO_x

emissions reduction through the utilization of the existing Low NO_x burners, adherence to good combustion practices, and burning of pipeline-quality natural gas.

Unit 4 has not been historically operated during the winter months. This unit was designed to be a baseload unit. It was not designed for frequent startup and shutdowns and is usually left online during low load hours of short duration (overnight), thus reducing frequency of startups and shutdowns. Emissions of NO_x will be limited with add-on controls and operational controls with good combustion practices after January 1, 2018. These controls are currently not in place and procedures will be developed using information from emissions controls manufacturers. KUC will operate Unit 4 per manufacturer's recommendations to limit emissions of NO_x during periods of startup and shutdown.

Unit 5 is currently under construction and will be operated as a baseload unit. KUC will develop procedures for both normal operation and for periods for startup and shutdown using manufacturer's information to limit emissions during periods of startup and shutdown.

Tailings
Particulate emissions will be emitted from windblown dust at the tailings site. There are no procedures for startup/shutdown at the tailings site.

Bonneville Borrow Plant (BBP)
The crusher and screening plant emissions will be controlled by a baghouse when the BBP begins operations. There are no startup/shutdown procedures for this baghouse.

A fugitive dust control plan will be developed to minimize emissions from the haul roads. Water and chemical dust suppressant will be applied on a scheduled basis to control dust.

Implementation Schedule
Power Plant
Units 1, 2, and 3 will be taken off line by January 1, 2018, or upon commencing operations of Unit 5, whichever is sooner. Unit 4 will be upgraded after Unit 5 has come on line. In order to operate Unit 4, KUC will be required to meet the emission limits set for the upgraded Unit 4 by January 1, 2018.

Tailings
There are no additional controls scheduled for the tailings site.

Bonneville Borrow Plant
There are no additional controls scheduled for the BBP site.

Kennecott Utah Copper: Smelter, Refinery & MAP

Startup / Shutdown
MAP
The Molybdenum Autoclave Processing (MAP) plant is under construction and is not scheduled to become operational until after 2016. When in operation the MAP unit is designed to be operated 24 hours per day and 365 days per year. The combined heat and power (CHP) has a turbine that is 9 ppm NO_x, and will be operated consistently, this will minimize emissions from the plant. The CHP unit may be shut down when it is scheduled for maintenance, planned plant shutdowns, and during periods of natural gas curtailments.

Low NO_x burners and good combustion practices will control emissions during startup/shutdown. Good combustion practice and proper operation of the unit include good engineering design, adherence to

operation and maintenance procedures, inspections, use of clean burning fuel, and burner optimization. Standard operating procedures will be developed for the CHP unit to ensure operation in accordance with the above practices.

Refinery

The refinery boilers are designed to be operated 24 hours per day, seven days per week to meet steam demands of the facility. The boiler load is adjusted based on the facility steam demand and the combined heat and power unit operations. The boilers may undergo a shutdown for maintenance activities, planned facility shutdowns, or if affected due to a natural gas curtailment. These operating practices limit the emissions for startup/shutdown procedures.

Flue gas recirculation (FGR), low NO_x burners, and good combustion practices will control emissions during startup/shutdown. Good combustion practices and proper operation of the boiler include good engineering design, adherence to operation and maintenance procedures, inspections, use of clean burning fuel, and burner optimization.

The standard operating procedures for the boilers were developed by KUC to ensure that these units are operated in accordance to the above practices. Operation of the boilers with good combustion practices is identified as effective in minimizing emissions during periods of startup and shutdown. These practices are already in place and effective in minimizing emissions during periods of startup and shutdown.

The refinery CHP unit is designed to be operated 24 hours per day, seven days per week. CHP may be shut down for scheduled maintenance activities, planned facility shutdowns, or if affected due to a natural gas curtailment.

Low NO_x burners and good combustion practices will control emissions during startup/shutdown. Good combustion practice and proper operation of the unit include good engineering design, adherence to operation and maintenance procedures, inspections, use of clean burning fuel, and burner optimization. Standard operating procedures will be developed for the CHP unit to ensure operation in accordance with the above practices. These practices are already in place and effective in minimizing emissions during periods of startup and shutdown.

Smelter

The smelter and associated equipment is designed to operate on a consistent basis. The operations are run in shutdown or startup modes during scheduled maintenance, plant shutdowns, and during periods of natural gas curtailments

The emissions for the smelter main stack, acid plant, and Holman boiler are limited during startup/shutdown by hourly limits for NO_x and/or SO_2 that are monitored by CEMs.

Specific procedures for startup and shutdown have been developed for the smelter. These procedures are developed based on design of its operation and best management practices.

Implementation Schedule

MAP

There are no additional required upgrades for the MAP plant. The existing equipment and controls at the MAP are recommended to meet the requirements of RACT. Therefore, an implementation schedule has not been proposed.

Refinery
There are no additional required upgrades for the refinery. The existing equipment and controls at the refinery are recommended to meet the requirements of RACT. Therefore, an implementation schedule has not been proposed.

Smelter
Based on a RACT analysis, there are no additional required upgrades for the smelter. The existing equipment and controls at the refinery are recommended to meet the requirements of RACT. Therefore, an implementation schedule has not been proposed.

Nucor Steel

Startup / Shutdown

EAF
The EAF and associated equipment are designed to operate on a continuous basis. The operations are in shutdown or startup modes only during scheduled maintenance, plant shutdowns and during periods of natural gas curtailment. The emissions for the EAF are limited during startup/shutdown by hourly limits for NO_x and/or SO_2 that are monitored by CEMs. Specific procedures for startup and shutdown have been developed for the EAF. These procedures are developed based on design of its operations and best management practices.

Reheat Furnaces
The reheat furnaces 1 and 2 are designed to operate on a consistent basis. The operations are in shutdown or startup modes during scheduled maintenance, plant shutdowns, and during periods of natural gas curtailments

Specific procedures for startup and shutdown have been developed for the reheat furnaces. These procedures are developed based on design of its operations and best management practices.

Implementation Schedule

EAF
Based on a RACT analysis, there are no required upgrades for the EAF. The existing equipment and controls for EAF are recommended to meet the requirements of RACT. Therefore, an implementation schedule has not been proposed.

Reheat Furnaces
Based on a RACT analysis, there are no required upgrades for the reheat furnace. The existing equipment and controls for the reheat furnaces are recommended to meet the requirements of RACT. Therefore, an implementation schedule has not been proposed.

Olympia Sales Company: Cabinet Manufacturing Facility

Startup / Shutdown
Process emissions from the mill, door, and sanding areas shall be exhausted through the baghouse during all startup, shutdown, and operations of the plant.

Implementation Schedule
By January 1, 2015, a baghouse control device shall be in operation for control of the process exhaust streams from the mill, door, and sanding areas.

PacifiCorp Energy: Gadsby Power Plant (PacifiCorp)

Startup / Shutdown

The Gadsby plant's Units 1, 2, and 3 natural gas fired boilers have limits which apply at all times – whether the units are operating in steady-state mode or during periods of startup or shutdown. Therefore, no special consideration is required for these units during alternate operating periods.

On the other hand, the combustion turbines (Units 4, 5, and 6) have emission limits for NO_x which apply during steady-state operation. These emission limits do not apply during periods of startup and shutdown because the catalyst in the SCR system requires a minimum operating temperature to effectively remove NO_x.

In order to minimize emissions generated during startup and shutdown of the combustion turbines, PacifiCorp has defined an emission minimization plan. The plan consists of two main components: defining the periods which constitute startup and shutdown, and limiting the total duration of those periods on a daily basis.

Although the turbines are simple cycle, and therefore similar in design to those used at other power generation facilities, PacifiCorp desired to specifically define both startup and shutdown in order to provide operational flexibility.

Implementation Schedule

The Unit 1, 2, and 3 boilers are already operating at RACT. No implementation schedule is required for these units.

It is the determination of this document that the catalyst beds on the Units 4, 5, and 6 SCR systems be extended. PacifiCorp has determined that this can most expeditiously be accomplished during the facility's next regularly scheduled maintenance outage, which will occur in April 2015. In order to allow for possible scheduling mishaps, delays, and other unforeseen difficulties, the implementation date listed in IX.H.12.q.iv.D will be changed from January 1, 2017, to January 1, 2016. This provides PacifiCorp approximately eight (8) months to install and test the modified catalyst beds.

Tesoro Refining and Marketing (Tesoro)

Startup / Shutdown

For startup and shutdown, Tesoro elected to follow the general refinery requirements with respect to startup and shutdown considerations in section IX.H.11.g.

Implementation Schedule

The Tesoro refinery currently meets the tank degassing, fuel gas sulfur limit, FCCU PM emission limit, and heat exchanger monitoring requirements of section IX.H.11.g. The refinery is in the process of installing the remaining control systems listed in the refinery general requirements. Flare gas recovery is scheduled for installation by November 2015. NO_x controls for the ultraformer unit are scheduled for May of 2015. Subpart GGGa implementation is ongoing, with completion expected in late Spring 2015. However, the plant-wide daily and annual emission caps listed in section IX.H.12.r are dependent on installation of the WGS on the FCCU for control of NO_x and SO_2 emissions. Tesoro has not yet identified an outlet for the purge water from the WGS and will likely be forced to rely on deep well injection. Approval and construction of the full WGS system and injection well will not be completed until, at the earliest, sometime in 2018. Therefore, retention of the existing January 1, 2019, implementation date for these remaining items is appropriate.

Procter & Gamble Paper Products Company

Startup / Shutdown

Startup for the boilers and paper machines requires a 30 minute period prior to normal operation for the equipment to reach steady state. Shutdown for the boilers is instantaneous and requires no time period.

Shutdown for the paper machines requires a 30 minutes diversion of the hot air to the dryer startup stack prior to equipment shutdown.

Implementation Schedule

Proctor and Gamble Paper Products Company already meets RACT for all of its operations so an implementation schedule has not been proposed.

University of Utah (U of U)

Startup / Shutdown

Building 303 LCHWTP

Units 3, 4, and 5 are designed to be baseload units. Because these units were not designed for frequent startup and shutdown, the units are often left online during low load hours of short duration (overnight), thus reducing frequency of startups and shutdowns.

The cogeneration unit was designed to be a baseload unit. It was not designed for frequent startup and shutdown and is typically left online during low load hours of short duration (overnight), thus reducing frequency of startups and shutdowns.

Unit 5 is currently under construction and will be operated as a baseload unit. The U of U will develop procedures for both normal operation and for periods for startup and shutdown using manufacturer's information to limit emissions during periods of startup and shutdown.

Building 302 UCHWTP

Units 1, 3, and 4 are designed to be baseload units. Because these units were not designed for frequent startup and shutdown the units are often left online during low load hours of short duration (overnight), thus reducing frequency of startups and shutdowns.

Implementation Schedule

Building 303 LCHWTP

Unit 5 has been decommissioned and is being replaced with two smaller units. In order to operate Unit 5a and 5b, the U of U will be required to meet the emission limits set for the upgraded units by performing a stack test within six months of commencing operation which will be sometime in 2017.

Unit 4 is scheduled to be decommissioned in 2016 and will be upgraded with two smaller boilers after Unit 5 has come on line. In order to operate Unit 4a and 4b, the U of U will be required to meet the emission limits set for the upgraded units by performing a stack within six months of commencing operation which will be sometime in 2018.

Building 302 UCHWTP

Unit 4 was updated in 2013 with a combustion control system with automatic O2 trim. Units 1 and 3 have been updated during 2014 with a combustion control system with automatic O2 trim. Building 302 units already meet RACT and so an implementation schedule has not been proposed.

Vulcraft and Nucor Building Systems

Startup / Shutdown

Wire Line, Coil Line, and Bar Line

The filters in the baghouses are not removed during startup or shutdown activities, and they provide the same efficient filtration whether just starting the equipment, operating the shot blasters, or shutting down the equipment.

Spray Booths - Built Up Line

The filters in the spray booth are not removed during startup or shutdown activities, and they provide the same efficient filtration whether just starting the equipment, operating the spray equipment, or shutting down the equipment.

Dip Tanks at Joist and Truss Painting Equipment and the Accessory Dip Tank

The dip tanks do not have a startup/shutdown process. The tank lids are removed during the painting process and placed back on the tank at the end of shift.

Bridging Line System, Drying Ovens at Built Up Line and at Purlin Line

These are natural gas ovens that are started up for parts drying, and shutdown at the end of shift. There is not a "startup" or "shutdown" process.

Flow Coaters

Flow coaters are instantly turned on and off to coat steel with paint, and do not have a "startup" or "shutdown" process.

Implementation Schedule

Based on the RACT analysis, there are no required upgrades for the processes at Vulcraft or Nucor Building Systems. The existing equipment and controls meet the requirements of RACT. Therefore, an implementation schedule has not been proposed.

Wasatch Integrated Waste Management District (Wasatch)

Startup / Shutdown

Wasatch has implemented several changes to ensure startup/shutdown procedures are consistent with best available control for each of the emission control units.

Gas Suspension Absorber (GSA) and PAC Injection

The GSAs are semi-dry scrubbers which inject hydrated lime slurry into the hot gas stream. The water in the slurry evaporates, providing a cooling and conditioning function, leaving the now dry reagent to be removed from the flue gas, downstream of the reactor, in a cyclone. The collected dry reagent is then fed back into the reactor directly above the slurry nozzle creating a circulating fluidized bed of reagent particles.

The circulating bed and the injection of lime slurry can only be maintained above certain minimum flows and temperatures. During startup/shutdown of the units there is a point at which the gas velocity is not sufficient to entrain the circulating bed and a temperature below which the moisture is not adequately evaporated from the slurry, causing material build-up problems within the reactor. The control system for the GSA automatically shuts down or starts up the feeder screws, slurry pumps, and PAC feeder based upon minimum required gas flows and temperature.

The facility operations and maintenance manual has been reviewed and modified to ensure the GSA is operated as long as possible during startup/shutdown.

By ensuring the GSA and PAC injection systems are operating at all times possible constitutes best available control during startup/shutdown operations at the Davis Energy Recovery Facility (ERF).

Electrostatic Precipitator (ESP)

Each unit is equipped with an ESP for control of particulate emissions. The ESPs can be operated independently of flow and temperature, although they do lose efficiency as the temperatures drop.

The facility operations and maintenance manual has been reviewed and modified to ensure the ESP is operated as long as possible during startup/shutdown.

Ensuring the ESPs are operating at all times possible constitutes best available control during startup/shutdown operations at the Davis ERF.

Implementation Schedule

Wasatch will be required to install SNCR to meet applicable RACT requirements for control of NO_x emissions. Wasatch has identified and the DAQ concurs with the following milestones to bring the SNCR system on-line.

Wasatch is currently negotiating a contract with HAFB for the continued purchase of steam from the Davis ERF. It is anticipated that the contract will be effective October 1, 2014, and will provide for revenue sufficient for continued operation of the facility. Based upon this start date, the schedule for engineering, procurement, and installation is as follows:

Task	Time	Completion Date
Steam Contract Execution		October 2014
Preliminary Engineering	6 months	April 2015
Procurement and Contract Execution	12 months	April 2016
Construction and Installation	12 months	April 2017
Startup	3 months	July 2017

Brigham Young University (BYU)

Startup / Shutdown

Boilers

The BYU campus operates two natural gas boilers during the winter season to supply heat. The boilers provide steam for building heat, and are shutdown during the warm weather months for maintenance. This results in the boilers having an estimated 24 hours/year of startup operation and 24 hours/year of shutdown operation for each boiler.

The boilers are designed to be operated seven days per week to meet steam demands of the campus. The boiler load is adjusted based on the campus steam demand. The boilers may undergo a shutdown for maintenance activities, planned facility shutdowns, or if affected due to a natural gas curtailment. BYU has guidelines for the startup and shutdown of the boilers. These operating practices limit the emissions for startup/shutdown procedures.

Brewster Paint Booth
The filters in the spray booths are not removed during startup or shutdown activities and provide the same efficient filtration regardless of the mode of operation.

Implementation Schedule
Boilers
The boiler modifications to reduce NO_x are scheduled to be implemented by January 1, 2017. The selected controls and the implementation schedule will be further evaluated in future studies.

Brewster Paint Booth
Based on a RACT analysis, there are no required upgrades for the spray booths. The existing equipment and controls meet the requirements of RACT. Therefore, an implementation schedule has not been proposed.

Geneva Nitrogen Inc.: Geneva Nitrogen Plant

Startup / Shutdown
RACT was established as SCR control which is installed on each of the nitric acid plants. Typical SCR abatement catalysts have an operating temperature range of 650 degrees Fahrenheit to 720 degrees Fahrenheit while the low temperature abatement catalyst used allows for operation down to 300 degrees Fahrenheit. By using this low temperature catalyst, the abatement process can be initiated at the lowest temperature possible (earlier in the startup sequence) while avoiding ammonium nitrate and ammonium nitrite condensation temperatures. If the abatement process were allowed to start before the required condensation temperatures were reached, the process would have the potential of forming and precipitating nitrate and nitrite compounds that could become extremely unstable at operating conditions.

Geneva Nitrogen Inc. does everything possible to minimize startup emissions from the nitric acid plants by initiating the SCR abatement process as soon as temperature permits and by using pure clean water in the absorption process for maximum absorption efficiency during startup conditions.

The wet scrubbing system startup and shutdown emissions for $PM_{10}/PM_{2.5}$ from the ammonium nitrate prill tower do not differ from normal operating emissions. Therefore, the wet scrubbing system does not result in startup/shutdown emissions because it is in operation either prior to or at the same time the prill tower is in operation.

Implementation Schedule
Geneva Nitrogen Inc., is currently meeting RACT and does not require the installation/retrofit of additional equipment at this time. Therefore, an implementation schedule is not required for Geneva Nitrogen Inc.

PacifiCorp Energy: Lake Side Power Plant

Startup / Shutdown
As a combination mainline/peaking power generation station, the Lake Side facility has implemented a defined startup/shutdown emission minimization plan. This plan is fully defined through permitting, although certain specific requirements have been included in the Part H.13 limitations for the facility. The plan consists of the following:

> Defining that "steady state operation" does not include periods of "startup," "shutdown," or "short-term transient load excursions;"

Including definitions of those three terms as they apply to the facility;

Limiting the duration of those events on an annual basis, and for startup and shutdown on a daily basis; and

Providing a limit for NO_x emissions during transient load excursions.

These items are provided separately for blocks 1 and 2 as the two blocks are slightly different in power production potential; but the concept and execution of the plan is the same in both cases.

Implementation Schedule
The Lake Side facility is currently at RACT. All controls are in place and both production Blocks 1 and 2 are now in operation. No implementation schedule is required.

Pacific States Cast Iron Pipe Company (PSCIPCO)

Startup / Shutdown

Cupola
The cupola is controlled with a baghouse, afterburner and recuperative incinerator which are all interlinked electronically to the cupola such that they must be operable before blast air is first put to the coke bed for the purposes of melting iron in the cupola. In addition, the facility is subject to 40 CFR 63 Subpart EEEEE which requires operation of the cupola as to minimize emissions during startup and shutdown periods by creating a startup, shutdown, and malfunction plan (SSMP).

Desulfurization
The desulfurization process is controlled through a baghouse that is manually started prior to the release of molten iron from the cupola at the start of each day and is run continuously until the last of the molten iron has been cast for the day.

Annealing Furnace
The annealing oven utilizes LNB technology, including periods of startup and shutdown.

Special Lining Shotblast
The shotblast is controlled through a baghouse. The shotblast process is interlinked electronically to the baghouse such that it will not operate unless the baghouse is operating.

Coating Operations
The coating operation does not have startup or shutdown emissions, regardless, this operation is limited to a VOC limit at all times so any excess emissions are included in that limit.

Implementation Schedule
By January 1, 2015, all VOC shall be limited to 118.16 tons per rolling 12-month period. PSCIPCO currently is operating the annealing oven per the limitation of 63.29 MMBtu/hr.

Based on a RACT analysis, there are no additional controls required for the other equipment. Therefore, an implementation schedule has not been proposed.

Payson City Power (PCPP)

Startup / Shutdown

In order to minimize emissions generated during startup and shutdown of the IC engines, the PCPP is required to maintain a defined emission minimization plan. The plan is similar in scope to those at all the smaller municipal power generation facilities, and consists of two main components: limiting the total duration of startup and shutdown periods on an annual and daily basis, and ensuring that startups and shutdowns are summed across all of the IC engines at the facility.

As most startup and/or shutdown periods are of very short duration, standard stack testing cannot be used to obtain emission totals when operating in these modes. Similarly, requiring use of expensive, expanded operating range CEM equipment to obtain emission information is of limited use when the ultimate goal is emission reduction through limiting the total amount of time the IC engines are operating outside of steady-state.

In order to ensure a level of equity between the three municipal power generators in the Provo, Utah $PM_{2.5}$ nonattainment area the same set of assumptions were used to "scale up" existing operations. Each facility reported a similar number of total plant startups – approximately 150 to 200 per annum. This value was scaled up by calculating the following:

(Operational days/week) x (Potential Startups/day) x (Weeks/year) = startups per engine

(3) x (3) x (52) = 468 startups per year per engine at the facility. For PCPP's four engines, this value is 1872. Using a base assumption of 15 minutes as the amount of time required for startup and shutdown (or 30 minutes for both periods combined), a limit of six (6) hours per day and 936 hours per year can be assigned for total startup and shutdown events for all engines combined.

Implementation Schedule

PCPP has completed installing the oxidation catalysts on all four IC engines as of June 2014. Testing has been completed and the units are now fully operational with all required controls in place. No implementation schedule is required.

Provo City Power: Power Plant (PCP)

Startup / Shutdown

In order to minimize emissions generated during startup and shutdown of the IC engines, PCP is required to maintain a defined emission minimization plan. The plan is similar in scope to those at all the smaller municipal power generation facilities, and consists of two main components: limiting the total duration of startup and shutdown periods on an annual and daily basis, and ensuring that startups and shutdowns are summed across all of the IC engines at the facility.

As most startup and/or shutdown periods are of very short duration, standard stack testing cannot be used to obtain emission totals when operating in these modes. Similarly, requiring use of expensive, expanded operating range CEM equipment to obtain emission information is of limited use when the ultimate goal is emission reduction through limiting the total amount of time the IC engines are operating outside of steady-state.

In order to ensure a level of equity between the three municipal power generators in the Provo, Utah $PM_{2.5}$ nonattainment area the same set of assumptions were used to "scale up" existing operations. Each facility reported a similar number of total plant startups – approximately 150 to 200 per annum. This value was scaled up by calculating the following:

(Operational days/week) x (Potential Startups/day) x (Weeks/year) = startups per engine

(3) x (3) x (52) = 468 startups per year per engine at the facility. For PCP's four engines, this value is 1824. Using a base assumption of 15 minutes as the amount of time required for startup and shutdown (or 30 minutes for both periods combined), a limit of six (6) hours per day and 936 hours per year can be assigned for total startup and shutdown events for all engines combined.

Implementation Schedule

PCP completed installation of the oxidation catalysts on all four IC engines. Testing has been completed and the units are fully operational with all controls in place. No implementation schedule is required.

PCP has indicated that they are no longer operating the natural gas-fired boilers (Boilers 1, 2, and 3), and these items have been permanently removed from service. This RACT review has been updated to remove reference to these units.

Springville City Corporation (SCC)

Startup / Shutdown

In order to minimize emissions generated during startup and shutdown of the IC engines, SCC is required to maintain a defined emission minimization plan. The plan is similar in scope to those at all the smaller municipal power generation facilities, and consists of two main components: limiting the total duration of startup and shutdown periods on an annual and daily basis, and ensuring that startups and shutdowns are summed across all of the IC engines at the facility.

As most startup and/or shutdown periods are of very short duration, standard stack testing cannot be used to obtain emission totals when operating in these modes. Similarly, requiring use of expensive, expanded operating range CEM equipment to obtain emission information is of limited use when the ultimate goal is emission reduction through limiting the total amount of time the IC engines are operating outside of steady-state.

In order to ensure a level of equity between the three municipal power generators in the Provo, Utah $PM_{2.5}$ nonattainment area the same set of assumptions were used to "scale up" existing operations. Each facility reported a similar number of total plant startups – approximately 150 to 200 per annum. This value was scaled up by calculating the following:

(Operational days/week) x (Potential Startups/day) x (Weeks/year) = startups per engine

(3) x (3) x (52) = 468 startups per year per engine at the facility. For SCC's seven engines, this value is 3276. Using a base assumption of 15 minutes as the amount of time required for startup and shutdown (or 30 minutes for both periods combined), a limit of 10.5 hours per day and 1638 hours per year can be assigned for total startup and shutdown events for all engines combined.

Implementation Schedule

SCC has oxidation catalysts on three of the seven engines at the Whitehead Utility Center. No implementation deadline has been established under IX.H.13.g of the SIP for installation of oxidation catalysts due to questions about their future use. Therefore, no implementation schedule is required at this time.